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UN

AGREEMENT

CONCERNING THE ADOPTION OF UNIFORM CONDITIONS OF APPROVAL AND RECIPROCAL RECOGNITION OF APPROVAL FOR MOTOR VEHICLE EQUIPMENT AND PARTS

done at Geneva on 20 March 1958

Addendum 56: Regulation No. 57

Amendment 2

Supplement 1 to the 01 series of amendments – Date of entry into force: 27 October 1992

UNIFORM PROVISIONS CONCERNING THE APPROVAL OF HEADLAMPS FOR MOTOR CYCLES AND VEHICLES TREATED AS SUCH

UNITED NATIONS

The "Contents," page i of the Regulation, amend to read:

"REGULATION

1. Scope
2. Definitions
3. Application for approval of a headlamp
.
.
.
9. Transitional provisions
.
.
.
.

Annexes:

Annex 6: Requirements for lamps incorporating lenses of plastic material - testing of lens or material samples and of complete lamps.

Appendix 1 - Chronological order of approval tests
Appendix 2 - Method of measurement of the diffusion and transmission of light
Appendix 3 - Spray testing method
Appendix 4 - Adhesive tape adherence test"

Paragraph 1, amend to read (including a new footnote *):

"1. SCOPE

This Regulation applies to the approval of headlamps using filament lamps and incorporating lenses of glass or plastic material */, which are provided for the equipment of motor cycles and vehicles treated as such.

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* Nothing in this Regulation shall prevent a Party to the Agreement applying this Regulation from prohibiting the combination of a headlamp incorporating a lens of plastic material approved under this Regulation with a mechanical headlamp-cleaning device (with wipers)."

Insert new paragraphs 2 to 2.2, to read:

2. DEFINITIONS

For the purpose of this Regulation,

2.1 "Lens" means the outermost component of the headlamp (unit) which transmits light through the illuminating surface;

2.2 "Coating" means any product or products applied in one or more layers to the outer face of a lens;"

Paragraph 2 (former), renumber as 2.3 and amend to read:

2.3 Headlamps of different "types" are headlamps which differ in such essential respects as:"

Paragraph 2.1 (former), renumber as 2.3.1

Paragraph 2.2 (former), renumber as 2.3.2 and amend to read:

"2.3.2 marking of the headlamp as defined in paragraph 4.1.4 below;"

Paragraphs 2.3 and 2.4 (former), renumber as 2.3.3 and 2.3.4.

Add a new paragraph 2.3.5 to read:

"2.3.5 the materials constituting the lenses and coating, if any."

Paragraph 3, amend to read:

"3. APPLICATION FOR APPROVAL OF A HEADLAMP 1/

3.1 The application for approval shall be submitted by the owner of the trade name or mark or by his duly accredited representative.

3.2 Every application for approval shall be accompanied by:"

Paragraph 3.1 (former), renumber as 3.2.1 and amend to read:

"3.2.1 drawings in triplicate in sufficient detail to permit identification of the type and representing a frontal view of the headlamp, with details of lens ribbing if any, and the cross-section; the drawings shall indicate the space reserved for the approval mark;"

Paragraph 3.2 (former), renumber as 3.2.2

Paragraph 3.3, renumber as 3.2.3 and amend to read:

"3.2.3 two samples of the type of headlamp with colourless lenses. 2/"

Add new paragraphs 3.2.4 to 3.4 to read:

"3.2.4 for the test of plastic material of which the lenses are made:

3.2.4.1 thirteen lenses;

3.2.4.1.1 six of these lenses may be replaced by six samples of material at least 60 x 80 mm in size, having a flat or convex outer surface and a substantially flat area (radius of curvature not less than 300 mm) in the middle measuring at least 15 x 15 mm;

3.2.4.1.2 every such lens or sample of material shall be produced by the method to be used in mass production;

3.2.4.2 a reflector to which the lenses can be fitted in accordance with the manufacturer's instructions.

3.3 The materials making up the lenses and coatings, if any, shall be accompanied by the test report of the characteristics of these materials and coatings if they have already been tested.

3.4 The competent authority shall verify the existence of satisfactory arrangements for ensuring effective control of the conformity of production before type approval is granted."

Paragraph 4.1.2, amend to read:

"4.1.2 externally and/or on the lens the indication of the exterior marking of the headlamp, visible when the headlamp is installed on the vehicle.

All units meeting the ... in the approval mark."

Insert a new paragraph 4.1.5, to read:

"4.1.5 On headlamps incorporating a lens of plastic material, the group of letters "PL" shall be affixed near the symbol prescribed in paragraphs 4.1.2 and 4.1.4 above;"

Paragraph 4.2 and its respective footnote 3/, replace by the following text:

"4.2 Moreover, they shall comprise, on the lens and on the main body, 3/ spaces of sufficient size for the approval mark and the additional symbols referred to in paragraph 4; these spaces shall be indicated on the drawings referred to in paragraph 3.2.1 above.

3/ The reflector is being considered as main body. If the lens cannot be detached from the main body of the headlamp, a space on the lens shall be sufficient."

Paragraph 5.1, amend to read:

"5.1 If all the samples of a type of headlamp submitted pursuant to paragraph 3 above satisfy the requirements of this Regulation, approval shall be granted."

Paragraph 5.2, add at the end:

"... except in the case of an extension of the approval to a headlamp differing only in the colour of the light emitted."

Paragraph 5.4.1.1, footnote 5/, amend to read:

"5/ 1 for ..., 15 (vacant) ...."

Paragraph 6.1, amend to read:

"6.1 Each sample of a type of headlamp shall conform to the specifications set forth in this paragraph and in paragraph 7 below and, if necessary, to those set forth in paragraph 8."

Paragraph 6.2.2, amend the symbol "(E_m)" to read "(E_{max})".

Add a new paragraph 6.5 to read:

"6.5 If the lens of the headlamp is of plastic material, tests shall be done according to the requirements of annex 6."

Paragraph 7.3, amend to read:

"... The "cut off" must be as straight and horizontal as possible over a range of at least 5° on either side of the line v-v (see annex 3). When aimed according to annex 3, ..."

Paragraph 8.1, delete the hyphen in the words "selective-yellow."

Paragraph 10, add at the end:

"... and if applicable paragraph 3 of annex 6 to this Regulation."

Paragraph 11.1, add at the end:

".... or if a headlamp bearing the approval mark does not conform to the type approved."

Annex 1, items 1 to 15, replace by the following text:

"1. Trade name or mark of the headlamp:

2. Manufacturer's name for the type of headlamp:

3. Manufacturer's name and address:

4. If applicable, name and address of the manufacturer's representative:

5. Submitted for approval on:

6. Technical service responsible for conducting approval tests:

7. Date of report issued by that service:

8. Number of report issued by that service:

9. Concise description:

- Category as described by the relevant marking:

MB, MB/ , MB PL, MB/PL 2/

- Category of filament lamp: S_1, S_2, S_1/S_2 2/,

Colour of light emitted: white/selective yellow 2/

10. Position of the approval mark:

11. Reason (s) for extension (if applicable):

12. Approval granted/refused, extended/withdrawn: 2/

13. Place:

14. Date:

15. Signature:

16. The list of documents deposited with the Administrative Service which has granted approval is annexed to this communication and may be obtained on request."

Annex 2, add a third example of the arrangement of approval mark together with the relating caption as follows:

"

The headlamp bearing the above approval mark is a headlamp incorporating a lens of plastic material which has been approved in the Netherlands (E 4) under approval number 01 2440. The approval number indicates that the approval was granted in accordance with the requirements of this Regulation, as amended by the 01 series of amendments.

It is so designed, that the filament of the passing beam can be lit together simultaneously with the driving beam and/or another reciprocally incorporated lighting function."

Annex 3, paragraphs 4.3, and 4.4.2, amend the units "lx" to read "lux".

Annex 5, delete the first paragraph reading:

"Compliance with ... incorporating lenses of plastic material."

Annex 5, paragraph 1.1.1.1, renumber footnote references * and ** and footnotes * and ** as 1/ and 2/ respectively.

Annex 5, paragraph 1.1.2.2, add at the end of the penultimate paragraph:

".... is covered in paragraph 2 of this annex);
...."

Annex 5, paragraph 1.2.1.1, amend the symbol "NaCMC" to read "NaCMC 3/" and add the following footnote:

"3/ NaCMC represents the sodium salt of carboxymethylcellulose, customarily referred to as CMC. The NaCMC used in the dirt mixture shall have a degree of substitution (DS) of 0.6-0.7 and a viscosity of 200-300 cP for a 2 per cent solution at 20°C."

Annex 5, paragraph 1.2.1.2, amend the symbol "50V" to read "50 V 4/ and add the following footnote:

"4/ 50 V is situated 375 mm below HV on the vertical line v-v on the screen at 25 m distance."

Add new Annex 6 to read:

"Annex 6

REQUIREMENTS FOR LAMPS INCORPORATING LENSES OF PLASTIC MATERIAL - TESTING OF LENS OR MATERIAL SAMPLES AND OF COMPLETE LAMPS

1. GENERAL SPECIFICATIONS

1.1. The samples supplied pursuant to paragraph 2.2.4. of Regulations Nos. 1, 8, 19, 20 or paragraph 3.2.4. of Regulations Nos. 5, 31, 57, 72 shall satisfy the specifications indicated in paragraphs 2.1 to 2.5 below.

1.2. The two samples of complete lamps supplied pursuant to paragraph 2.2.3. of Regulations Nos. 1, 8, 19, 20 or paragraph 3.2.3. of Regulations Nos. 5, 31, 57, 72 and incorporating lenses of plastic material shall, with regard to the lens material, satisfy the specifications indicated in paragraph 2.6. below.

1.3. The samples of lenses of plastic material or samples of material shall be subjected, with the reflector to which they are intended to be fitted (where applicable), to approval tests in the chronological order indicated in table A reproduced in appendix 1 to this annex.

1.4. However, if the lamp manufacturer can prove that the product has already passed the tests prescribed in paragraphs 2.1.-2.5. below, or the equivalent tests pursuant to another Regulation, those tests need not be repeated; only the tests prescribed in appendix 1, table B, shall be mandatory.

2. TESTS

2.1. Resistance to temperature changes

2.1.1. Tests

Three new samples (lenses) shall be subjected to five cycles of temperature and humidity (RH = relative humidity) change in accordance with the following programme:

3 hours at 40° C ± 2° C and 85-95% RH;

1 hour at 23° C ± 5° C and 60-75% RH;

15 hours at -30° C ± 2° C;

1 hour at 23° C ± 5° C and 60-75% RH;

3 hours at 80° C ± 2° C;

1 hour at 23° C ± 5° C and 60-75% RH;

Before this test, the samples shall be kept at 23° C ± 5° C and 60-75% RH for at least four hours.

Note: The periods of one hour at 23° C ± 5° C shall include the periods of transition from one temperature to another which are needed in order to avoid thermal shock effects.

2.1.2. Photometric measurements

2.1.2.1. Method

Photometric measurements shall be carried out on the samples before and after the test.

These measurements shall be made using a standard lamp, at the following points:

B 50 L and 50 R for the passing beam of a passing lamp or a passing/driving lamp (B 50 R and 50 L in the case of headlamps intended for left-hand traffic);

E_{max} route for the driving beam of a driving lamp or a passing/driving lamp;

HV and E_{max} zone D for a front fog lamp.

2.1.2.2. Results

The variation between the photometric values measured on each sample before and after the test shall not exceed 10% including the tolerances of the photometric procedure.

2.2. Resistance to atmospheric and chemical agents

2.2.1. Resistance to atmospheric agents

Three new samples (lenses or samples of material) shall be exposed to radiation from a source having a spectral energy distribution similar to that of a black body at a temperature between 5,500K and 6,000K. Appropriate filters shall be placed between the source and the samples so as to reduce as far as possible radiations with wave lengths smaller than 295 nm and greater than 2,500 nm. The samples shall be exposed to an energetic illumination of 1,200 W/m^2 ± 200 W/m^2 for a period such that the luminous energy that they receive is equal to 4,500 MJ/m^2 ± 200 MJ/m^2. Within the enclosure, the temperature measured on the black panel placed on a level with the samples shall be 50° C ± 5° C. In order to ensure a regular exposure, the samples shall revolve around the source of radiation at a speed between 1 and 5 1/min.

The samples shall be sprayed with distilled water of conductivity lower than 1 mS/m at a temperature of 23° C ± 5° C, in accordance with the following cycle:

spraying: 5 minutes;
drying: 25 minutes.

2.2.2. Resistance to chemical agents

After the test described in paragraph 2.2.1. above and the measurement described in paragraph 2.2.3.1. below have been carried out, the outer face of the said three samples shall be treated as described in paragraph 2.2.2.2. with the mixture defined in paragraph 2.2.2.1. below.

2.2.2.1. Test mixture

The test mixture shall be composed of 61.5% n-heptane, 12.5% toluene, 7.5% ethyl tetrachloride, 12.5% trichloroethylene and 6% xylene (volume per cent).

2.2.2.2. Application of the test mixture

Soak a piece of cotton cloth (as per ISO 105) until saturation with the mixture defined in paragraph 2.2.2.1. above and, within 10 seconds, apply it for 10 minutes to the outer face of the sample at a pressure of 50 N/cm^2, corresponding to an effort of 100 N applied on a test surface of 14 x 14 mm.

During this 10-minute period, the cloth pad shall be soaked again with the mixture so that the composition of the liquid applied is continuously identical with that of the test mixture prescribed.

During the period of application, it is permissible to compensate the pressure applied to the sample in order to prevent it from causing cracks.

2.2.2.3. Cleaning

At the end of the application of the test mixture, the samples shall be dried in the open air and then washed with the solution described in paragraph 2.3. (Resistance to detergents) 23° C ± 5° C.

Afterwards the samples shall be carefully rinsed with distilled water containing not more than 0.2% impurities at 23° C ± 5° C and then wiped off with a soft cloth.

2.2.3. Results

2.2.3.1. After the test of resistance to atmospheric agents, the outer face of the samples shall be free from cracks, scratches, chipping and deformation, and the mean variation in transmission

$\Delta t = \frac{T2 - T3}{T_2}$, measured on the three samples according to the procedure described in appendix 2 to this annex shall not exceed 0.020

($\Delta t_m \leq 0.020$).

2.2.3.2. After the test of resistance to chemical agents, the samples shall not bear any traces of chemical staining likely to cause a variation of flux diffusion, whose mean variation

$\Delta d = \frac{T5 - T4}{T_2}$, measured on the three samples according to the procedure described in appendix 2 to this annex shall not exceed 0.020

($\Delta d_m \leq 0.020$).

2.3. Resistance to detergents and hydrocarbons

2.3.1. Resistance to detergents

The outer face of three samples (lenses or samples of material) shall be heated to 50° C ± 5° C and then immersed for five minutes in a mixture maintained at 23° C ± 5° C and composed of 99 parts distilled water containing not more than 0.02% impurities and one part alkylaryl sulphonate.

At the end of the test, the samples shall be dried at 50° C ± 5° C. The surface of the samples shall be cleaned with a moist cloth.

2.3.2. Resistance to hydrocarbons

The outer face of these three samples shall then be lightly rubbed for one minute with a cotton cloth soaked in a mixture composed of 70% n-heptane and 30% toluene (volume per cent), and shall then be dried in the open air.

2.3.3. Results

After the above two tests have been performed successively, the mean value of the variation in transmission

$\Delta t = \frac{T2 - T3}{T_2}$, measured on the three samples according to the procedure described in appendix 2 to this annex shall not exceed 0.010

($\Delta t_m \leq 0.010$).

2.4. Resistance to mechanical deterioration

2.4.1. Mechanical deterioration method

The outer face of the three new samples (lenses) shall be subjected to the uniform mechanical deterioration test by the method described in appendix 3 to this annex.

2.4.2. Results

After this test, the variations:

in transmission: $\Delta t = \frac{T2 - T3}{T_2}$,

and in diffusion: $\Delta d = \frac{T5 - T4}{T_2}$,

shall be measured according to the procedure described in appendix 2 in the area specified in paragraph 2.2.4. above. The mean value of the three samples shall be such that: $\Delta t_m \leq 0.100$;

$\Delta d_m \leq 0.050$.

2.5. Test of adherence of coatings, if any

2.5.1. Preparation of the sample

A surface of 20 mm x 20 mm in area of the coating of a lens shall be cut with a razor blade or a needle into a grid of squares approximately 2 mm x 2 mm. The pressure on the blade or needle shall be sufficient to cut at least the coating.

2.5.2. Description of the test

Use an adhesive tape with a force adhesion of 2 N/(cm of width) ± 20% measured under the standardized conditions specified in appendix 4 to this annex. This adhesive tape, which shall be at least 25 mm wide, shall be pressed for at least five minutes to the surface prepared as prescribed in paragraph 2.5.1.

Then the end of the adhesive tape shall be loaded in such a way that the force of adhesion to the surface considered is balanced by a force perpendicular to that surface. At this stage, the tape shall be torn off at a constant speed of 1.5 m/s ± 0.2 m/s.

2.5.3. Results

There shall be no appreciable impairment of the gridded area. Impairments at the intersections between squares or at the edges of the cuts shall be permitted, provided that the impaired area does not exceed 15 per cent of the gridded surface.

2.6. Tests of the complete lamp incorporating a lens of plastic material

2.6.1. Resistance to mechanical deterioration of the lens surface

2.6.1.1. Tests

The lens of lamp sample No. 1 shall be subjected to the test described in paragraph 2.4.1. above.

2.6.1.2. Results

After the test, the results of photometric measurements carried out on the lamp in accordance with this Regulation shall not exceed by more than 30% the maximum values prescribed at points B 50 L and HV and not be more than 10% below the minimum values prescribed at point 75 R (in the case of headlamps intended for left-hand traffic, the points to be considered are B 50 R, HV and 75 L), in the case of front fog lamps this requirement shall be applied to zones A and B only.

2.6.2. Test of adherence of coatings, if any

The lens of lamp sample No. 2 shall be subjected to the test described in paragraph 2.5. above.

3. VERIFICATION OF THE CONFORMITY OF PRODUCTION

3.1. With regard to the materials used for the manufacture of lenses, the lamps of a series shall be recognized as complying with this Regulation if:

3.1.1. After the test for resistance to chemical agents and the test for resistance to detergents and hydrocarbons, the outer face of the samples exhibits no cracks, chipping or deformation visible to the naked eye (see paras. 2.2.2., 2.3.1. and 2.3.2.);

3.1.2. After the test described in paragraph 2.6.1.1., the photometric values at the points of measurement considered in paragraph 2.6.1.2. are within the limits prescribed for conformity of production by this Regulation.

3.2. If the test results fail to satisfy the requirements, the tests shall be repeated on another sample of headlamps selected at random.

Annex 6 - Appendix 1

CHRONOLOGICAL ORDER OF APPROVAL TESTS

A. Tests on plastic materials (lenses or samples of material supplied pursuant to paragraph 2.2.4 (Regulations Nos. 1, 8, 19, 20; paragraph 3.2.4 in Regulations Nos. 5, 31, 57, 72) of this Regulation)

Samples / Tests		Lenses or samples of material						Lenses						
		1	2	3	4	5	6	7	8	9	10	11	12	13
1.1	Limited photometry (para. 2.1.2)										X	X	X	
1.1.1	Temperature change (para. 2.1.1)										X	X	X	
1.2	Limited photometry (para. 2.1.2)										X	X	X	
1.2.1	Transmission measurement	X	X	X	X	X	X	X	X	X				
1.2.2	Diffusion measurement	X	X	X				X	X	X				
1.3	Atmospheric agents (para. 2.2.1)	X	X	X										
1.3.1	Transmission measurement	X	X	X										
1.4	Chemicals agents (para. 2.2.2)	X	X	X										
1.4.1	Diffusion measurement	X	X	X										
1.5	Detergents (para. 2.3.1)				X	X	X							
1.6	Hydrocarbons (para. 2.3.2)				X	X	X							
1.6.1	Transmission measurement				X	X	X							
1.7	Deterioration (para. 2.4.1)							X	X	X				
1.7.1	Transmission measurement							X	X	X				
1.7.2	Diffusion measurement							X	X	X				
1.8	Adherence (para. 2.5)													X

B. Tests on complete lamps (supplied pursuant to paragraph 2.2.3 (Regulations Nos. 1, 8, 19, 20; paragraph 3.2.3 in Regulations Nos. 5, 31, 57, 72) of this Regulation)

Tests	Complete lamp	
	Sample No.	
	1	2
2.1 Deterioration (para. 2.6.1.1)	X	
2.2 Photometry (para. 2.6.1.2)	X	
2.3 Adherence (para. 2.6.2)		X

Annex 6 - Appendix 2

METHOD OF MEASUREMENT OF THE DIFFUSION AND TRANSMISSION OF LIGHT

1. EQUIPMENT (see figure)

The beam of a collimator K with a half divergence $\frac{\beta}{2} = 17.4 \times 10^{-4}$ rd is limited by a diaphragm D_T with an opening of 6 mm against which the sample stand is placed.

A convergent achromatic lens L_2, corrected for spherical aberrations, links the diaphragm D_T with the receiver R; the diameter of the lens L_2 shall be such that it does not diaphragm the light diffused by the sample in a cone with a half top angle of $\beta/2 = 14°$.

An annular diaphragm D_D with angles $\frac{\alpha\ o}{2} = 1°$ and $\frac{\alpha\ max}{2} = 12°$ is placed in an image focal plane of the lens L_2.

The non-transparent central part of the diaphragm is necessary in order to eliminate the light arriving directly from the light source. It shall be possible to remove the central part of the diaphragm from the light beam in such a manner that it returns exactly to its original position.

The distance L_2 D_T and the focal length F_2 1/ of the lens L_2 shall be so chosen that the image of D_T completely covers the receiver R.

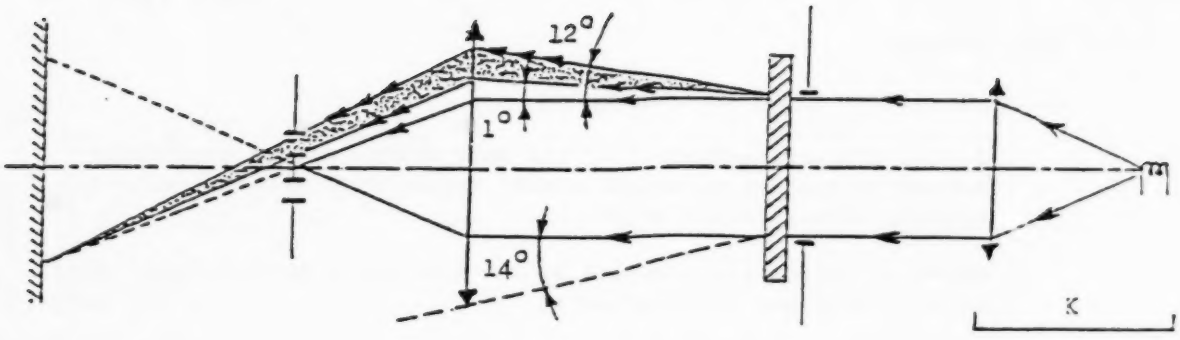
When the initial incident flux is referred to 1,000 units, the absolute precision of each reading shall be better than 1 unit.

2. MEASUREMENTS

The following readings shall be taken:

Reading	With sample	With central part of D_D	Quantity represented
T_1	no	no	Incident flux in initial reading
T_2	yes (before test)	no	Flux transmitted by the new material in a field of 24° C
T_3	yes (after test)	no	Flux transmitted by the tested material in a field of 24° C
T_4	yes (before test)	yes	Flux diffused by the new material
T_5	yes (after test)	yes	Flux diffused by the tested material

1/ For L_2 it is recommended to use a focal distance of about 80 mm.


12°
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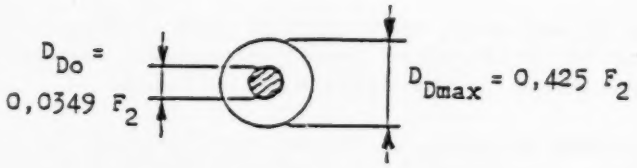
D_{Do} =
0,0349 F_2
D_{Dmax} = 0,425 F_2

R
F_2
L_2
L_1
D_D
D_T

Annex 6 - Appendix 3

SPRAY TESTING METHOD

1. Test equipment

1.1. Spray gun

The spray gun used shall be equipped with a nozzle 1.3 mm in diameter allowing a liquid flow rate of 0.24 ± 0.02 l/minute at an operating pressure of 6.0 bars -0, +0.5 bar.

Under these operation conditions the fan pattern obtained shall be 170 mm ± 50 mm in diameter on the surface exposed to deterioration, at a distance of 380 mm ± 10 mm from the nozzle.

1.2. Test mixture

The test mixture shall be composed of:

Silica sand of hardness 7 on the Mohr scale, with a grain size between 0 and 0.2 mm and an almost normal distribution, with an angular factor of 1.8 to 2;

Water of hardness not exceeding 205 g/m^3 for a mixture comprising 25 g of sand per litre of water.

2. Test

The outer surface of the lamp lenses shall be subjected once or more than once to the action of the sand jet produced as described above. The jet shall be sprayed almost perpendicular to the surface to be tested.

The deterioration shall be checked by means of one or more samples of glass placed as a reference near the lenses to be tested. The mixture shall be sprayed until the variation in the diffusion of light on the sample or samples measured by the method described in appendix 2, is such that:

$$\Delta d = \frac{T5 - T4}{T_2} = 0.0250 \pm 0.0025$$

Several reference samples may be used to check that the whole surface to be tested has deteriorated homogeneously.

Annex 6 - Appendix 4

ADHESIVE TAPE ADHERENCE TEST

1. PURPOSE

This method allows to determine under standard conditions the linear force of adhesion of an adhesive tape to a glass plate.

2. PRINCIPLE

Measurement of the force necessary to unstick an adhesive tape from a glass plate at an angle of 90°.

3. SPECIFIED ATMOSPHERIC CONDITIONS

The ambient conditions shall be at 23°C ± 5°C and 65 ± 15% relative humidity (RH).

4. TEST PIECES

Before the test, the sample roll of adhesive tape shall be conditioned for 24 hours in the specified atmosphere (see para. 3 above).

Five test pieces each 400 mm long shall be tested from each roll. These test pieces shall be taken from the roll after the first three turns were discarded.

5. PROCEDURE

The test shall be under the ambient conditions specified in paragraph 3.

Take the five test pieces while unrolling the tape radially at a speed of approximately 300 mm/s, then apply them within 15 seconds in the following manner:

Apply the tape to the glass plate progressively with a slight lengthwise rubbing movement of the finger, without excessive pressure, in such a manner as to leave no air bubble between the tape and the glass plate.

Leave the assembly in the specified atmospheric conditions for 10 minutes.

Unstick about 25 mm of the test piece from the plate in a plane perpendicular to the axis of the test piece.

Fix the plate and fold back the free end of the tape at 90°. Apply force in such a manner that the separation line between the tape and the plate is perpendicular to this force and perpendicular to the plate.

Pull to unstick at a speed of 300 mm/s ± 30 mm/s and record the force required.

6. RESULTS

The five values obtained shall be arranged in order and the median value taken as the result of the measurement. This value shall be expressed in Newtons per centimetre of width of the tape."